# **GEOMORPHOLOGY**

# Physiographic Region/Geology/Soils

The Salt River basin lies in the eastern section of the Glaciated Plains Division of Missouri (Thom and Wilson 1980), also known as the Dissected Till Plains (Figure 1980). The Till Plains were formed by glaciers that deposited drift composed mostly of clay with some rock, gravel, and sand lenses (MDNR unpublished). In the upper portion of the basin, where local relief is generally low (North Fork, Middle Fork, South Fork), the glacial till is overlain by loess deposits, except in a few areas where streams have incised Pennsylvanian or Mississippian aged rock. Although highly variable, till is generally less than 200 feet thick and composed predominantly of clay with some rock fragments and sand lenses. Beneath the till in upland areas may be a thin layer of sand and gravel and then a layer up to 200 feet thick of alternating deposits of Pennsylvanian age sandstone, siltstone, shale, limestone, and coal (Figure ge). An exception is the central portion of the North Fork sub-basin where glacial till is underlain by thickly bedded limestones interbedded with thin Mississippian age shales. In the valleys of the Middle and South Fork sub-basins, streams have eroded the Pennsylvanian rocks to expose limestone bedrock and shales. In the central portion of the basin around Mark Twain Lake, relief increases and glacial till shallows to less than 100 feet thick. Exposed limestone and shales in the valley walls and streambeds are more prevalent. Till quickly shallows in the lower Salt River sub-basin (below the re-regulation dam) to less than 50 feet as valleys become more abrupt with high relief. A relief of 440 feet is attained at the lower end of the basin near Louisiana. Exposed Mississippian and Ordovician age shales and limestone are common in both the valley walls and streambeds. Detailed geological history of the basin can be found in Klein and Daley (1974).

Nearly all of the basin is located in the Central Claypan region (Allgood and Persinger 1980). Central Claypan soils are primarily Putnam-Mexico and Mexico-Leonard-Armstrong-Lindley associations formed in loess or glacial till. Putnam-Mexico soils are generally deep, nearly level to gently sloping soils with a silt loam surface overlying a silty clay subsoil of very low permeability. Mexico-Leonard-Armstrong-Lindley soils are deep, level to steep, well drained to poorly drained, loamy and clayey uplands soils. Mexico and Leonard soils in this association have a silt loam surface overlying a silty clay subsoil while Armstrong and Lindley soils have loam surface overlying a clay loam subsoil. Subsoil permeability is slow.

The extreme lower portion of the basin is located the Central Mississippi Valley Wooded Slopes region. The Menfro-Winfield-Lindley soils in this area are moderately well drained with a loam or silt loam surface overlying silty clay loam subsoil of slow permeability. Poorly drained, loamy soils of the Arbela-Piopolis-Blackoar association are found on the lower floodplains of major streams in the basin. These alluvial soils generally have a silt loam or silty clay loam surface overlying a silt loam subsoil of moderate to slow permeability. As the Salt River enters the Mississippi River floodplain soils turn to loamy, silty, or clayey alluvium of the Westerville-Fatima-Wabash association.

Due to the clay content of the till and underlying shale and limestone, vertical movement of water from the surface to groundwater is limited throughout the basin (MDNR unpublished).

Few significant springs exist in the basin so base flow is not well sustained during dry periods.

#### **Stream Orders**

Streams were identified on USGS 7.5 minute topographic maps and ordered according to Strahler (1957). A stream code was assigned to each third-order or higher stream based on the method of Pflieger et al. (1981). There are 165 third-order and larger streams in the basin (Table 1). The mainstem Salt River and the South Fork Salt River are the only seventh-order streams, and North Fork and Middle Fork are the only sixth-order streams. Fifth-order streams include Bear Creek (North Fork sub-basin), Long Branch (South Fork sub-basin), Elk Fork (Middle Fork sub-basin), and Spencer Creek (lower Salt River sub-basin). All other streams in the basin are fourth-order or smaller.

#### **Watershed Area**

The Salt River watershed drains 2,914 square miles (1,867,900 acres) of land. The North Fork, South/Middle Fork, and lower Salt River sub-basins compose 32%, 41%, and 27% of the Salt River basin, respectively (SCS 1992). Drainage area of other fifth-order and larger streams in the basin, estimated by digitizing 1:100,000 topographic maps, are approximately as follows: Bear Creek-124 square miles, Middle Fork-352 square miles (excluding Elk Fork), Elk Fork-292 square miles, Long Branch-188 square miles, and Spencer Creek-215 square miles.

#### **Channel Gradient**

Channel gradients for all third-order and higher streams were determined using USGS 7.5 minute topographic maps and digitizing software (Table 1). The average gradient for each stream is based on the change in elevation from the stream's uppermost point to its mouth. Gradients were also calculated separately for each order within an individual stream.

Channel gradients for the major streams in the upper Salt basin are relatively low. Of the fifth-order and larger streams in the basin, Bear Creek (North Fork sub-basin) has the highest gradient (5.4 feet/mile). Although the lower Salt River has an average gradient of only 1.4 feet/mile, many of the smaller streams in its watershed have high gradients due to high local relief. For example, an unnamed third-order stream in Pike County has a gradient of 87 feet/mile. Ten other streams in this sub-basin have gradients exceeding 50 feet/mile.

### **Soil Conservation Projects**

Under the authority of the Watershed Protection and Flood Prevention Act, P.L. 83-566, three soil conservation projects have been proposed for the basin (Table 2). The Middle Fork Salt River application is inactive because a referendum to re-authorize the watershed subdistrict failed. The other two applications are also inactive because they were determined to be economically unfeasible. There are nine SALT projects and one EARTH project in the basin covering 235,688 acres (Table 2).

The North Fork Project, which evolved from the Mark Twain Water Quality Initiative, is an education and outreach program that provides information, training, and networking opportunities on water quality issues, including soil conservation, in the basin. This project is coordinated by the Clarence Cannon Wholesale Water Commission and University of Missouri Outreach and Extension and is partially funded under Section 319 of the Clean Water Act.

#### **Public Areas**

There are seventeen conservation and stream access areas totaling 7,648 acres within the Salt River basin (Table 3; Figures lp, mp, up). Many of the areas provide access to basin streams. Boat ramps are provided at Paris, Santa Fe, Hunnewell, and Indian Camp accesses and at Ted Shanks CA. Several accesses are located within a few miles of each other and provide excellent drop-off and pick-up points for one or two day fishing/float trips (e.g. Pin Oak to Arrow-wood-10 miles, Arrow-wood to Mound View-12.5 miles, Mound View to Hunnewell-7.3 miles). In addition to Mark Twain Lake, the Missouri Department of Conservation manages the fisheries of eight small impoundments in the basin with a combined total of 566 surface acres.

Other publicly owned areas in the basin includes land managed by the U.S. Army Corps of Engineers surrounding Mark Twain Lake. Much of the 33,845 acres around the lake are available for public use. Mark Twain State Park (Missouri Department of Natural Resources) encompasses another 2,285 acres near the lake.

## **Corps of Engineers 404 Jurisdiction**

The Salt River basin is under the jurisdiction of the St. Louis District of the Army Corps of Engineers. Application for 404 permits should be sent to: 1222 Spruce St. St. Louis, Missouri 63103-2833, (314) 331-8575.

Table 1.Location, mileage, and habitat information for all third-order and larger streams in the Salt River basin. Location=section, township, range at mouth of the stream. nm=not measurable.

<b>Stream Location</b>	S - T - R	Order	Length/ Miles	Gradient (ft/mile) Overall- By order			
North Fork Salt River S	North Fork Salt River Sub-basin						
North Fork	34 55n 8w	6	119.3	3.6- <sup>6</sup> 2.5, <sup>5</sup> 3.3, <sup>4</sup> 6.3, <sup>3</sup> 5.7			
Otter Cr.	25 55n 9w	4	50.4	5.0- <sup>4</sup> 5.4, <sup>3</sup> 3.3			
Little Otter Cr.	36 56n 12w	3	7.3	8.9- <sup>3</sup> 5.0			
Unnamed	22 55n 10w	3	3.8	22.4- <sup>3</sup> 24.2			
Buck Cr.	23 55n 9w	3	5.5	30.0- <sup>3</sup> 25.7			
Crooked Cr.	9 55n 9w	4	36.4	6.0- <sup>4</sup> 5.2, <sup>3</sup> 7.4			
Unnamed	1 56n 12w	3	3.8	17.6- <sup>3</sup> 7.8			
Unnamed	8 56n 11w	3	7.3	11.0- <sup>3</sup> 6.6			
Unnamed	9 56n 11w	3	3.1	19.4- <sup>3</sup> nm			
Little Crooked Cr.	25 56n 11w	3	5.6	15.2- <sup>3</sup> 7.8			

Table 1 continued

Cloop Cr	6.55m Ovv	2	12.6	11.4-310.7
Clear Cr.	6 55n 9w	3	13.6	
Brush Cr.	33 56n 9w	3	11.1	14.4-313.4
Horseshoe Br.	27 56n 9w		3.8	36.8- <sup>3</sup> nm
Black Cr.	4 56n 9w	4	50.5	4.5-43.3, 35.4
Perry Br.	32 59n 11w	3	8.2	10.4-310.3
Pallard Br.	14 58n 11w	3	8.4	11.3-37.7
Unnamed	24 58n 11w	3	3.5	$20.2 - \frac{3}{3}15.4$
Unnamed	1 57n 10w		3.2	20.5-316.7
Oak Dale Br.	7 57n 9w	3	4.3	23.3- <sup>3</sup> nm
Baker Br.	29 57n 9w		4.3	28.3-317.4
Unnamed	18 57n 10w	3	2.3	47.8- <sup>3</sup> 17.4
Briggs Br.	12 57n 11w	3	6.1	17.1- <sup>3</sup> 10.3
Unnamed	3 57n 11w	3	5.9	18.6- <sup>3</sup> 10.3
Cat Br.	36 58n 12w	3	7.0	16.4- <sup>3</sup> 10.0
Unnamed	3 57n 12w	3	2.0	37.5- <sup>3</sup> 10.6
Ten Mile Cr.	31 58n 11w	4	16.4	8.5- <sup>4</sup> 3.3, <sup>3</sup> 7.3
Unnamed	31 58n 12w	3	5.8	15.7- <sup>3</sup> 6.6
Bear Cr.	15 58n 12w	3 5 3	45.6	5.4- <sup>5</sup> 3.6, <sup>4</sup> 5.0, <sup>3</sup> 8.3
Unnamed	27 62n 15w	3	3.5	22.9- <sup>3</sup> 8.8
Unnamed	6 61n 14w	3	1.8	38.9- <sup>3</sup> 21.5
Titus Cr.	1 60n 14w	4	7.2	16.8- <sup>4</sup> 12.8, <sup>3</sup> 9.7
Unnamed	12 60n 14w	3	3.6	27.8- <sup>3</sup> 13.3
Unnamed	5 59n 13w	3	4.2	22.6- <sup>3</sup> 11.9
Unnamed	15 59n 13w	3	4.6	23.9- <sup>3</sup> nm
Unnamed	15 59n 13w	3	2.5	32.0- <sup>3</sup> nm
Goodson Br.	31 59n 12w	3	6.6	17.4- <sup>3</sup> 10.5
Byar Br.	5 58n 12w	3	7.4	18.2- <sup>3</sup> 11.1
Unnamed	31 62n 14w	3	3.5	21.4- <sup>3</sup> 18.8
Unnamed	10 58n 12w	3	2.6	36.5- <sup>3</sup> nm
Saling Br.	5 59n 12w	3	10.6	12.7- <sup>3</sup> 8.6
Two Mile Cr.	24 60n 13w	3	4.7	21.3- <sup>3</sup> 10.3
Shelton Br.	11 60n 13w	3	4.0	28.8- <sup>3</sup> 16.0
Surratt Cr.	34 61n 13w	3	8.4	19.0- <sup>3</sup> 13.1
Big Deer Br.	15 61n 13w	3	7.0	15.7- <sup>3</sup> 15.6
Unna med	9 61n 13w	3	2.9	41.4- <sup>3</sup> nm
Brushy Fork	36 62n 14w	3	6.5	20.0- <sup>3</sup> 6.1
Timber Br.	32 62n 13w	3	9.9	16.7- <sup>3</sup> 10.9
Hog Br.	31 62n 13w	3	6.9	15.9- <sup>3</sup> 13.8
Lost Cr.	18 62n 13w	3	8.3	17.5- <sup>3</sup> 10.7
Steer Cr.	2 62n 14w	3	13.0	11.9- <sup>3</sup> 8.6
Floyd Cr.	35 63n 14w	4	16.5	9.4-46.9, 37.4
Unnamed	15 63n 15w	3	3.7	21.6- <sup>3</sup> nm
Bee Br.	27 63n 14w	3	7.7	16.6-313.9
Unnamed	36 64n 15w	3	4.0	22.5-318.9
Unnamed	23 64n 15w	3	5.3	15.1-313.7
			1 2.2	10.1 10.7

Table 1 continued

Middle Fork Salt River Sub-basin					
Middle Fork	7 54n 8w	6	116.3	3.5-63.4, 52.3, 44.3, 38.2	
Unnamed	2 54n 9w	3	3.8	40.8-327.3	
Elk Fork	15 54n 9w	5	53.3	4.9- <sup>5</sup> 3.4, <sup>4</sup> 5.3, <sup>3</sup> 4.8	
Turkey Cr.	26 54n 10w	3	4.7	30.9-321.9	
Bee Cr.	29 54n 10w	4	11.8	13.0-411.8, 38.3	
Unnamed	7 53n 10w	3	1.9	42.1- <sup>3</sup> nm	
Unnamed	5 53n 10w	3	5.0	22.0-320.0	
Brian Cr.	26 54n 11w	3	5.3	14.2-312.1	
Allen Reese Fork Cr.	29 54n 11w	4	24.7	6.3-45.5, 35.1	
Saling Cr.	28 53n 12w	3	15.8	5.7-34.5	
Milligan Cr.	28 54n 12w	4	18.6	7.2- <sup>4</sup> 5.6, <sup>3</sup> 6.0	
Unnamed	5 53n 12w	3	5.9	17.8-318.5	
Hardin Cr.	18 53n 12w	3	8.8	11.9-39.4	
Coon Cr.	19 54n 12w	3	18.2	7.7-34.9	
Unnamed	17 54n 13w	3	6.0	16.7-312.5	
Flat Cr.	30 55n 11w	4	19.3	9.3-45.5, 36.9	
Bear Br.	36 55n 12w	3	3.5	34.3- <sup>3</sup> 21.4	
Baker Br.	3 54n 12w	3	3.8	23.7-320.0	
Mud Cr.	22 55n 12w	4	21.4	8.4- <sup>4</sup> 5.7, <sup>3</sup> 11.1	
Unnamed	19 55n 13w	3	4.1	18.3-32.5	
Unnamed	20 55n 13w	3	4.9	18.4- <sup>3</sup> nm	
Unnamed	14 55n 13w	3	3.0	38.3- <sup>3</sup> 21.4	
Unnamed	17 55n 12w	3	3.4	32.4- <sup>3</sup> 16.7	
Richland Cr.	6 55n 12w	3	5.9	19.5- <sup>3</sup> 13.6	
Unnamed	25 56n 13w	3	8.0	14.4- <sup>3</sup> 10.5	
Hooven Cr.	27 56n 13w	4	9.5	15.9- <sup>4</sup> 7.7, <sup>3</sup> 6.2	
Unnamed	32 56n 13w	3	4.4	26.1- <sup>3</sup> 17.5	
Winn Br.	15 56n 13w	3	12.0	10.8-38.1	
Narrows Cr.	16 56n 13w	4	9.2	15.7- <sup>4</sup> 9.4, <sup>3</sup> 10.6	
Unnamed	7 56n 13w	3	5.6	18.8- <sup>3</sup> 12.5	
Unnamed	30 57n 13w	3	3.8	27.6- <sup>3</sup> nm	
Brush Cr.	18 57n 13w	4	6.4	19.5- <sup>4</sup> 10.9, <sup>3</sup> 10.3	
Sewer Cr.	12 57n 14w	3	4.8	18.8- <sup>3</sup> 7.7	
Billy's Br.	31 58n 13w	3	11.5	9.1- <sup>3</sup> 6.7	
Bee Br.	34 59n 14w	3	4.7	19.1- <sup>3</sup> nm	
Unnamed	23 59n 14w	3	4.7	21.9- <sup>3</sup> 12.1	
Linn Br.	11 59n 14w	3	5.6	17.9- <sup>3</sup> 14.0	
South Fork Salt River Sub-basin					
South Fork	34 55n 8w	7	68.3	4.3- <sup>7</sup> 2.4, <sup>6</sup> 3.5, <sup>5</sup> 3.8, <sup>4</sup> 3.1, <sup>3</sup> 6.4	
Brush Cr.	31 54n 8w	4	12.1	16.5- <sup>4</sup> 19.5, <sup>3</sup> 19.7	
S. Brush Cr.	36 54n 9w	3	6.0	23.3- <sup>3</sup> 22.4	
Long Br.	5 53n 8w	5	55.9	5.0- <sup>5</sup> 6.8, <sup>4</sup> 5.7, <sup>3</sup> 3.1	
Scattering Br.	25 53n 11w	3	7.9	9.5- <sup>3</sup> nm	
Goodwater Cr.	9 52n 10w	3	17.0	7.1- <sup>3</sup> 5.3	

Table 1 continued

Youngs Cr.	30 53n 8w	4	36.6	7.5-47.5, 35.9
Five Mile Cr.	33 53n 9w	3	4.8	24.0- <sup>3</sup> 21.2
Elm Br.	16 53n 8w	3	6.0	23.3- <sup>3</sup> 23.0
Littelby Cr.	33 53n 8w	4	19.8	9.1- <sup>4</sup> 8.2, <sup>3</sup> 7.6
Bean Br.	2 51n 8w	3	12.1	7.9- <sup>3</sup> 6.4
Tattys Cr.	6 52n 8w	3 3	3.5	30.0- <sup>3</sup> 27.3
Bean Cr.	19 52n 8w	3	4.7	22.3- <sup>3</sup> 14.7
Fish Br.	35 52n 9w	3	10.2	13.7- <sup>3</sup> 18.1
Skull Lick Cr.	2 51n 9w	4	20.0	8.3-45.6, <sup>3</sup> 6.5
Big Br.	12 51n 10w	3	3.1	29.0- <sup>3</sup> 16.7
Davis Cr.	24 51n 9w	4	26.4	8.0-44.3, 38.7
Unnamed	25 51n 10w	3	1.8	44.4- <sup>3</sup> nm
Mayes Cr.	27 51n 10w	3	7.0	17.6- <sup>3</sup> 11.4
Long Br.	31 51n 8w	3	6.8	13.2- <sup>3</sup> 10.0
Beaverdam Cr.	30 50n 8w	4	17.4	8.6- <sup>4</sup> 4.8, <sup>3</sup> 7.4
Jesse Cr.	35 50n 9w	3	5.5	14.5- <sup>3</sup> 8.8
Lower Salt River Sub-	basin		<u>'</u>	
Salt River	12 54n 2w	7	78.0	1.4-all order 7
Grassy Cr.	2 54n 2w	3	10.7	32.3- <sup>3</sup> 25.3
Sugar Cr.	31 55n 2w	4	7.5	28.0- <sup>4</sup> 7.1, <sup>3</sup> 24.7
Horn Br.	35 55n 2w	3	3.1	51.6- <sup>3</sup> 27.4
Haw Cr.	23 55n 3w	3	5.3	34.2- <sup>3</sup> 7.8
Unnamed	9 55n 3w	3	3.0	86.6- <sup>3</sup> 23.8
Peno Cr.	17 55n 3w	4	21.0	18.3- <sup>4</sup> 13.6, <sup>3</sup> 25.5
Little Peno Cr.	11 54n 4w	3	6.3	45.2- <sup>3</sup> 21.1
Unnamed	12 54n 4w	3	3.4	79.4- <sup>3</sup> nm
Unnamed	29 54n 3w	3 3	3.1	71.0- <sup>3</sup> 46.9
Gailey Br.	32 54n 3w	3	3.6	56.9- <sup>3</sup> 24.7
Weatherly Br.	5 53n 3w	3	3.0	55.0- <sup>3</sup> 43.8
Unnamed	1 55n 4w	3	3.0	55.0- <sup>3</sup> 14.3
Spencer Cr.	10 55n 4w	5	40.5	7.5-54.2, 48.4, 311.8
Plum Cr.	28 55n 4w	3	6.5	31.5- <sup>3</sup> 28.4
Crooked Cr.	30 55n 4w	3	6.1	36.9- <sup>3</sup> 27.2
Brush Cr.	31 55n 4w	3	8.1	$27.2^{-3}24.0$
S. Spencer Cr.	1 54n 5w	4	17.3	17.1- <sup>4</sup> 8.7, <sup>3</sup> 20.1
Clifty Fork	6 53n 4w	3	5.6	39.3- <sup>3</sup> 45.8
Coon Cr.	26 54n 5w	3	5.4	37.0- <sup>3</sup> 19.2
Hippo Br.	17 54n 5w	3	7.8	23.7- <sup>3</sup> 22.4
Hays Cr.	20 54n 5w	3	8.1	24.1- <sup>3</sup> 23.8
Straight Br.	34 54n 6w	3	4.3	20.9- <sup>3</sup> 29.4
Unnamed	23 53n 6w	3	4.8	10.4- <sup>3</sup> 5.0
Unnamed	10 55n 4w	3	5.3	43.4- <sup>3</sup> 8.3
Unnamed	3 55n 4w	3	3.6	56.9- <sup>3</sup> 13.6
Camp Cr.	32 56n 4w	3	4.8	42.7- <sup>3</sup> 17.2
Turkey Cr.	35 56n 5w	3	7.8	30.1- <sup>3</sup> 25.4

Table 1 continued

Unnamed	27 56n 5w	3	4.2	53.6- <sup>3</sup> nm
Big Cr.	32 56n 5w	3	8.2	28.0- <sup>3</sup> 23.6
Sugar Cr.	1 55n 6w	4	5.2	45.0- <sup>4</sup> nm, <sup>3</sup> 30.3
Owl Cr.	1 55n 6w	3	5.1	42.2-314.7
Cedar Cr.	33 56n 6w	3	8.7	28.2- <sup>3</sup> 24.6
Ely Cr.	4 55n 6w	4	11.3	20.9- <sup>4</sup> 15.2, <sup>3</sup> 23.3
Nichols Cr.	5 55n 6w	3	7.5	30.7- <sup>3</sup> 26.7
Griffin Hollow	16 55n 6w	3	4.6	45.7- <sup>3</sup> 33.5
Lick Cr.	26 55n 7w	4	33.5	7.9- <sup>4</sup> 8.0, <sup>3</sup> 7.0
Dry Fork	35 55n 7w	3	8.4	19.0- <sup>3</sup> 20.9
Burbridge Cr.	21 54n 7w	3	7.8	17.9- <sup>3</sup> 18.1
Mace Br.	28 54n 7w	3	3.2	32.8- <sup>3</sup> 41.0
Gallaher Cr.	4 53n 7w	3	7.9	13.3- <sup>3</sup> 13.7
E. Lick Cr.	9 53n 7w	4	13.5	7.8- <sup>4</sup> 9.1, <sup>3</sup> 6.9
Middle Lick Cr.	26 53n 7w	3	12.7	6.7- <sup>3</sup> 5.4
Unnamed	22 55n 7w	3	2.8	62.5- <sup>3</sup> 20.8
Indian Cr.	21 55n 7w	4	17.6	13.1- <sup>4</sup> 7.3, <sup>3</sup> 12.6
L. Indian Cr.	20 55n 7w	4	12.4	15.8- <sup>4</sup> 15.1, <sup>3</sup> 18.1
Madden Br.	5 55n 7w	3	3.4	42.6- <sup>3</sup> 35.7
Ely Br.	32 55n 7w	3	3.3	53.0- <sup>3</sup> 40.9
Pigeon Roost Cr.	32 55n 7w	3	7.9	25.9- <sup>3</sup> 20.3
Sandy Cr.	31 55n 7w	3	9.8	20.9- <sup>3</sup> 16.1
Shell Br.	34 55n 8w	3	7.3	27.4- <sup>3</sup> 33.3

Table 2. Soil conservation projects in the Salt River basin.

County	PL-566	SALT	EARTH
Macon, Monroe Randolph, Shelby	Middle Fork Salt* River (225,730 A)		
Monroe, Shelby	Crooked and Otter creeks* (137,570 A)		
Pike, Ralls	Pike-Spencer* (239,746 A)		
Monroe, Shelby			Otter Creek (67,200 A)
Monroe		Matts Branch (6,000 A)	
Pike		Spencer Tributary (3,900 A)	
Ralls		Straight Branch (4,784 A)	

Table 2 continued

Schuyler	Greentop Lake (2,371 A)
Macon	Middle Fork Salt (5,300 A)
Shelby	Clarence Area (4,020 A)
Adair	Bear Creek (30,323 A)
Knox	North Fork Salt (44,124 A)
Shelby	North Fork Salt (67,666 A)

<sup>\*</sup>waiting priority

Table 3. Publicly owned Conservation Areas (CA) and stream accesses (AC) located in the Salt River basin.

Area Name	Miles of Stream Frontage	Stream	Acres	Development <sup>1</sup>
C.L Northcutt Memorial CA	0		80	P,PC,H
Maude Shore Jacks CA	0		23	
Sears Memorial Wildlife Area	0		160	
Redmon CA	0		120	
Cedar Bluff AC	0.25	Elk Fork	40	P,PC,H,F
Paris AC	2.7	Middle Fork	9	P,BRS,R,F
Santa Fe AC	0.1	South Fork	7	P,BRS,F
Robert M. White CA	2.7	Long Br. Youngs Cr.	1,163	P,PC,H,F
Ruby Clark Willingham Memorial Wildlife Area	0		70	P,PC,H
Woodlawn AC	0.5	Middle Fork	65	P,H,F
Ranacker CA	1.4	Peno Cr.	1,598	P,PC,R,H
Ted Shanks CA	10.25	Salt R.	4,026	P,BRL,BRS, R,PC,F,H
Arrow-Wood AC	1.0	North Fork	153	P,PC,H,F
Hunnewell AC	0.3	North Fork	18	P,BRS,F
Mound View AC	0.3	North Fork	41	H,F
Pin Oak CA	0		65	P,PC,H,F
Indian Camp AC	0.25	Salt River	10	P,PC,BRS,F

<sup>&</sup>lt;sup>1</sup>-P=parking lot, BRL=lake boat ramp, BRS=stream boat ramp, R=restroom, PC=primitive camping, F=fishing, H=hunting

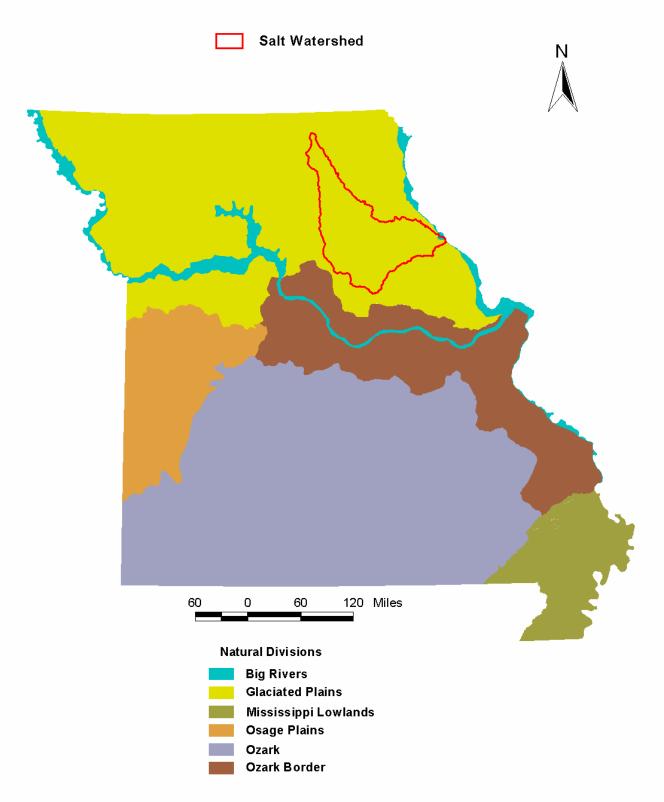


Figure nd. Location of the Salt River Watershed within the natural divisions of Missouri.

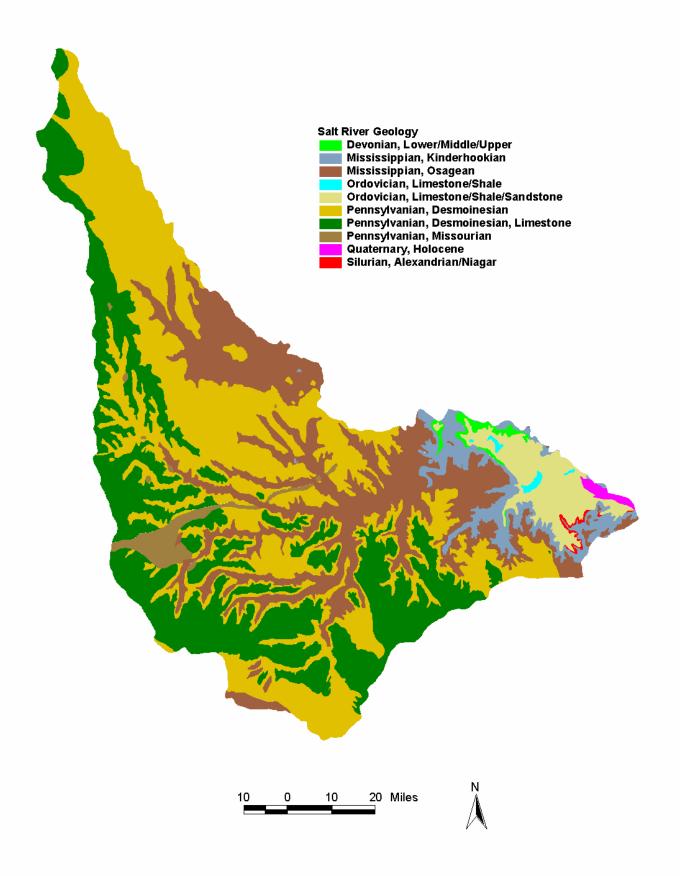


Figure ge. Geological formations in the Salt River Watershed in Missouri.

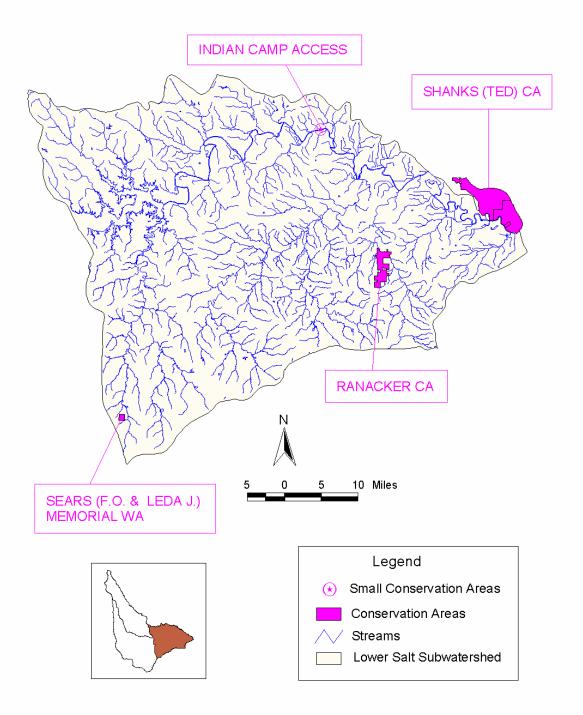


Figure Ip. Public areas in the lower Salt River subwatershed in Missouri. CA = Conservation Area. WA = Wildlife Area.

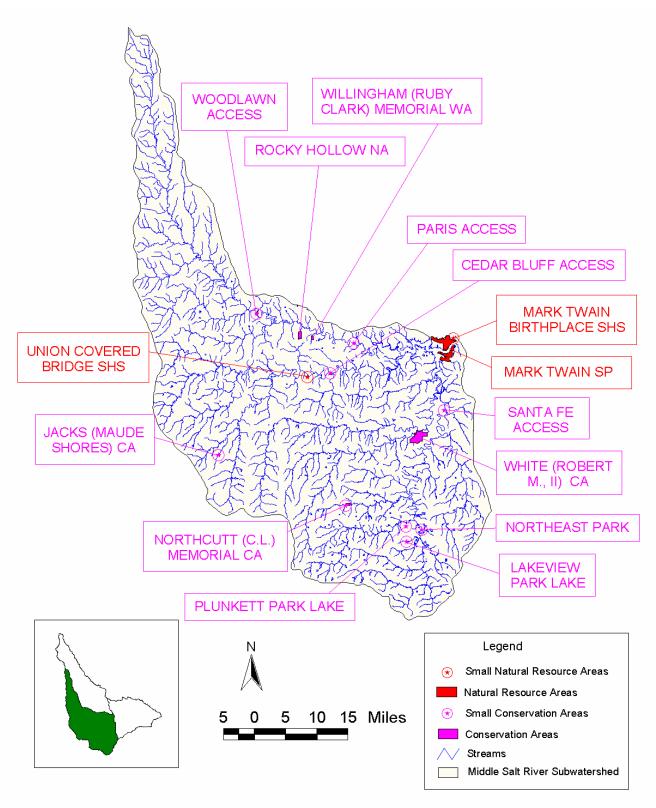


Figure mp. Public areas in the middle Salt River subwatershed in Missouri. CA: Conservation Area, NA: Natural Area, WA: Wildlife Area, SP: State Park, SHS: State Historical Site.

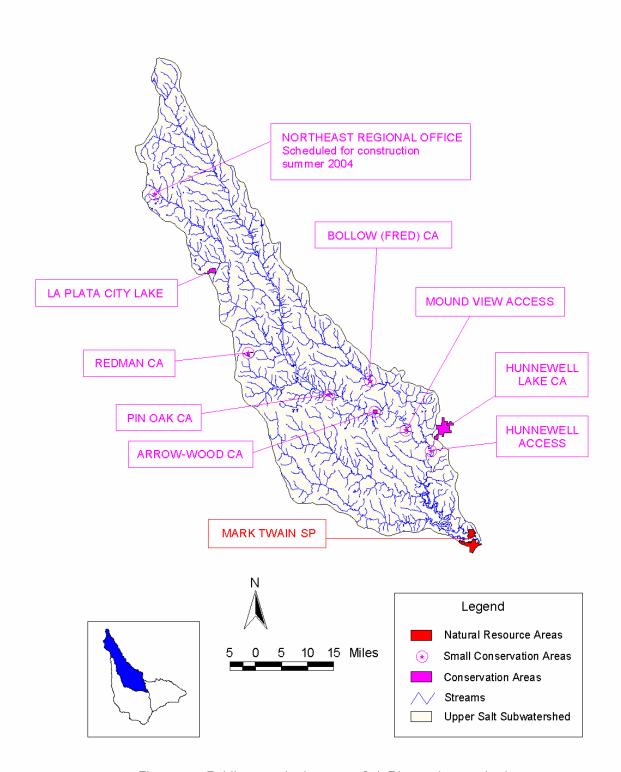


Figure up. Public areas in the upper Salt River subwatershed in Missouri. CA: Conservation Area, SP: State Park.